

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Gactano Santoruvo et al.
Application No. : 10/029,533
Filed : December 20, 2001
For : HEATING ELEMENT FOR MICROFLUIDIC AND
MICROMECHANICAL APPLICATIONS

Examiner : Leonid M. Fastovsky
Art Unit : 3742
Docket No. : 01-RB-075 (850063.587)
Date : April 12, 2007

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S REPLY BRIEF (37 C.F.R. § 1.192)

Commissioner for Patents:

In this reply brief, Applicants wish to focus on a statement by the Examiner with which there is strong disagreement. The Examiner states that “[t]he limit[ation] of ‘generate heat above a selected threshold’ recited in claim 1, line 4, is a broad recitation and since Cozad’s transistor is a heat source and generates heat it meets the limitation.”

It appears that the Examiner is arguing that the limitation “selected threshold” is not defined, and so any heat generated by Cozad’s transistor is sufficient to meet the limitation. This is not correct for a number of reasons.

The specification states, at page 8, lines 16-21,

A particular channel resistance R_{DS} is selected such that when the channel region 20 is conducting electric current, heat above a selected threshold is generated and transferred to the chamber 30 to heat the substance 32 in the chamber. The

threshold is selected to supply the amount of heat desired to be transferred to the object to be heated or necessary to raise the temperature of the object to be heated or a substance to at least a desired temperature.

From the quoted passage, it can be seen that the term *heat above a selected threshold* is used to refer to the heat necessary to produce a desired temperature. One of ordinary skill in the art will recognize that such a threshold will vary with each application, but will nevertheless be easily definable. This is further supported by U.S. Patent No. 6,160,243 to Cozad, cited in rejecting claims of the present application. Cozad provides a heat source that “selectively generates heat ... so as to selectively expand the fluid in a predetermined manner,” (column 2, lines 12-15) and refers to heat of a “predetermined temperature” (column 3, line 57). However, Cozad employs a resistive heater to provide most of the heat necessary to achieve a “predetermined temperature.” Clearly, a “transistor ... operable to generate heat above a selected threshold” is not so broad as to encompass any transistor that generates heat. Cozad’s transistor does not generate heat above a selected threshold, as the term is used in the present specification, or as such a term would be understood in view of Cozad.

Additionally, when a transistor is used as part of an electronic circuit, as in the case of the Cozad reference, the operation of the transistor is controlled for proper functioning of the circuit. The amount of heat generated will vary according to the degree of conduction of the transistor, but will be determined by the needs of the circuit, not by the amount of heat desired. This is contrary to the terms of claim 1, which recites, in part, a “transistor formed in the semiconductor material and *operable to generate heat above a selected threshold*.” If a transistor is controlled for a purpose other than to generate a selected amount of heat, it cannot be also be operable to generate heat above a selected threshold.

Cozad’s transistor is controlled as a load in a circuit to permit dynamic, i.e., selectively variable, loading (column 4, lines 46-49). In other words, Cozad’s transistor is operable to selectively vary the loading of its circuit. If the transistor were operated specifically to generate heat above a selected threshold, it would be incapable of simultaneously functioning as a dynamic load, and the operation of the circuit would fail. Thus, Cozad’s transistor is not operable to generate heat above a selected threshold as recited in claim 1.

Applicants request that the Examiner's rejection be reversed and that the claims be allowed for the reasons stated herein as well as the reasons provided in the Appeal Brief filed on November 6, 2006.

Respectfully submitted,
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